

SEMICONDUCTOR DEVICE AND ITS FABRICATION

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Abstract

PURPOSE: To obtain a vertical MOSFET in which fluctuation of threshold voltage is suppressed by composing a gate insulating film of a heat treated CVD insulating film and a thermal oxide film thereby reducing the charge being charged up at the gate insulating film.

CONSTITUTION: A drain region 11 is provided on the main surface of a semiconductor substrate 10 and a base region 12 is provided on the drain region 11, and then a source region 13 is provided on the surface of the base region. A gate insulating film 20 is then deposited on the inner wall face of a trench, and its periphery, penetrating the base region from the surface of the source region and reaching the drain region. A gate electrode G is then provided on the gate insulating film 20 composed of a thermal oxidation film 21 formed heat treating the surface of the semiconductor substrate 10 in oxidative atmosphere, and an annealed CVD insulating film 22 on the thermal oxidation film 21. Since the gate insulating film has stabilized electrical and mechanical characteristics, charge-up is suppressed.

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